

Prevalence of Foreign Body Rumen Impaction in Slaughtered Goats in Ibadan, Southwest Nigeria

J. F. Akinrinmade^{*1} and A. S. Akinrinde²

¹Department of Veterinary Surgery and Reproduction, Faculty of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria;
and ²Department of Biochemistry, College of Medicine, University of Ibadan, Ibadan, Nigeria

ABSTRACT

A study was conducted on 4,488 goats in Ibadan, southwest sub-tropic humid zone, over a 4-month period to determine the prevalence of rumen impaction with indigestible garbage and to evaluate breed, sex and age as risk factors. Ante-mortem and post-mortem examinations were carried out on each of the animals to determine the breed, health status, sex, age and presence of indigestible garbage in the rumen. Prevalence of rumen impaction with indigestible garbage was 9.61%. It was significantly ($p < 0.05$) higher in Red Sokoto breed than other breeds. Sex and age were found to have significant influence on the prevalence of rumen impaction. It was significantly higher ($p < 0.05$) in females and older goats than males and younger ones, respectively.

Key words: Rumen, impaction, goats, Nigeria

INTRODUCTION

Efforts at improving livestock productivity in the tropics and subtropics particularly in Nigeria continue to be unrewarding because of near ubiquitous shortage of good quality livestock feeds, rapidly diminishing forage and poor husbandry practices (ILCA, 1986).

Goat production in Nigeria makes a major contribution to the Nigerian economy (Adeloye, 1998). Goats are kept under traditional systems of management with the major fodder resources comprising grasses, browse, crop residues and domestic waste (Van Raay and Leeuw, 1974, Adeloye, 1998). Various workers have identified malnutrition as the major constraint to livestock productivity in Nigeria (Lamorde and Franti, 1975; Syngé, 1980; Gbodi *et al*, 1990).

Rumen impaction associated with ingestion of foreign materials in cattle, sheep and goats is well documented in the sub-Saharan geographical zone of Nigeria (Abdullahi *et al*, 1984, Garba *et al*, 1994, Elsa *et al*, 1995, Remi-Adewumi *et al*, 2004). These various reports have however, not received appropriate attention because the effects of impaction, many times, go unnoticed or wrongly diagnosed as it presents similarities to other conditions (Garba and Abdullahi, 1995). Many cases have been discovered at necropsy or at slaughter or as incidental findings during surgery (Abdullahi *et al*, 1984, Elsa *et al*, 1995, Remi-Adewumi *et al*, 2004). Cases of fatal foreign body rumen impaction have also been reported (Akinrinmade *et al*, 1988, Otesile and Akpokodje, 1991, Elsa *et al*, 1995). In recent times, unpublished reports from the Veterinary Teaching hospital, University of Ibadan indicate an upsurge in the number of diagnostic and therapeutic laparorumenotomy procedures performed in sheep and goats presented with suspected foreign body rumen impaction.

Prior to this study, the condition is widely believed to be peculiar to the sub-Saharan geographical zone of the north because of its heavy livestock population and poor fodder resources. There is, to the best of our knowledge, no report on the prevalence of foreign body rumen impaction in goats slaughtered in the south-west sub-humid tropical zone of Nigeria. This is the objective which our study sought to achieve.

*Author for correspondence

MATERIALS AND METHODS

The investigation was carried out at the Bodija Central Abattoir in Ibadan, a city located in the south-west sub-tropical humid zone, along the north-south nomadic route in Nigeria. The study was conducted from March to June 2010 and involved daily visits to the abattoir for ante-mortem and post-mortem examinations of goats brought in for slaughter.

Pre-slaughter physical examinations were performed on each goat to determine its health status, sex, age and breed. The animals were also observed closely for signs of disease or pathological conditions through their general disposition, gait and condition of hair coat, feces and visible mucous membranes. Those found to be unhealthy were noted for detailed post-mortem examination. The age of each animal was estimated by dental examination according to the method described by Sisson and Grossman (1975).

With easily distinguishable colour markings, breed and sex, a detailed systematic examination of the fore-stomach was done immediately after flaying and evisceration. The dry weight and composition of impacted materials were noted in affected animals.

RESULTS

A total of 4,488 goats were examined during the period of study. These comprised of Red Sokoto 3,624 (80.7%), Sahel 401 (8.9%) and West Africa Dwarf 463 (10.4%) breeds, respectively. Of the 4488 goats examined, 432 (9.61%) had indigestible garbage in their rumen (Table 1). The individual breed prevalence were Red Sokoto 6.26%, Sahel 1.53% and West African Dwarf 1.82%, respectively (Table 1).

Table 2 shows sex distribution in the goats examined with rumen impaction with indigestible garbage. More females (52.92%) than males (47.08%) were slaughtered during the investigation. The prevalence of rumen impaction was significantly higher ($p < 0.05$) in females than males.

Table 3 shows age distribution in the goats examined with rumen impaction. The prevalence of rumen impaction was significantly higher ($p < 0.05$) in older goats than younger ones. Generally, majority of the goats examined ante-mortem were in poor body condition and moderately emaciated with starchy hairy coat. The garbage recovered from animals with impaction varied in weight (0.6-3.0kg) and composition with non-biodegradable polythene materials being the most prominent. There was a linear correlation between the age of animals and the size of impacted materials recovered.

Table 1. Breed prevalence of foreign rumen impaction in goats examined at the Bodija Abattoir, Ibadan.

Breed	Number of goats examined	Number of goats with rumen impaction
Red Sokoto (RS)	3,624 (80.7)	281 (6.26)
Sahel (SH)	401 (8.9)	69 (1.53)
West African Dwarf (WAD)	463 (10.4)	82 (1.82)
Total	4,488 (100)	432 (9.61)

Table 2. Sex prevalence of foreign body rumen impaction in goats examined at the Bodija Abattoir, Ibadan

Sex	Number of goats examined	Number of goats with rumen impaction
Male	2,113 (47.08)	152 (3.38)
Female	2,375 (52.92)	280 (6.23)
Total	4,488	432 (9.61)

DISCUSSION

The results of this investigation confirmed the prevalence of foreign body rumen impaction in goats in the subtropical humid zone in Nigeria. The prevalence rate of 9.61% was quite low compared to 20.7% reported by Remi-Adewumi *et al.* (2004) in goats in a similar study in the northern sub-Saharan region.

Differences in prevalence rates could arise from differences in ecological/geographic zone and period of study. Remi-Adewumi *et al.* (2004) carried out their study between October and December while the present study was done between March and June. Also, sample size could account for differences in prevalence rates as Remi-Adewumi *et al.* (2004) sampled 127 out of 613 (20.7% prevalence) as compared with 432 out of 4488 (9.61% prevalence) in the present study.

Goats and sheep are delicate and selective feeders and foreign body rumen impaction was believed to be a rarity

(Hofmeyer, 1994). The dwindling fodder resources with the attendant mineral inadequacies may be solely responsible for the ingestion of materials other than normal food observed in this study. Previous workers attributed depraved appetite to dietary deficiency, either of bulk or of individual nutrients (Langhans and Scharrel, 1996; Radostits *et al*, 2007).

Table 3. Age distribution and prevalence of foreign body rumen impaction in goats examined at the Bodija Abattoir, Ibadan

Age (years)	Number of goats examined	Number of goats with rumen impaction
Below 1 year	826 (18.40)	64 (1.42)
1-2 years	1,683 (37.50)	86 (1.92)
2-3 years	1,189 (26.50)	98 (2.18)
Above 3 years	790 (17.60)	184 (4.09)
Total	4,488	432 (9.61)

The prevalence of 1.82% in West African dwarf goats compared favorably with 1.53% obtained for Sahel goats which are found mainly in the arid and semi-arid regions of the North-East of Nigeria. Feed inadequacy either in terms of quantity or quality transcends geographical zone. This is what the findings in this study is suggesting. There is a stiff competition between animals kept within the municipality and man/their owners. Nutritional supplement is absent in most cases. This finding probably suggests similarity in etiopathogenesis. The significantly higher prevalence of rumen impaction in females than males may be ascribed to the slow, progressive nature of formation of impaction which favors female goats that are kept longer than males for reproductive in females could be attributed to clinical and economic factors. Poor reproductive performance engendered by chronic nutritional inadequacy may encourage slaughter for economic benefit. This observation, i.e., the significantly higher prevalence of rumen impaction in females than males is also in agreement with the findings of Remi-Adewumi *et al* (2004) in sheep and goats.

The higher prevalence of foreign body rumen impaction in older than younger ones observed in this study, suggest that the process of formation is slow, gradual and progressive (Sanni *et al*, 1995). The results of this study have shown that foreign body rumen impaction in goat is mainly associated with a declining fodder resources that transcend geographical boundaries. There is a common denominator – nutritional inadequacy in terms of quality and quantity. It also brought to light the environmental hazard posed to animals by improper waste disposal and the urgent need for proper legislation.

Further studies to evaluate the specific role of nutritional mineral inadequacies and other risk factors will be required in order to stem the tide of our dwindling livestock productivity in Nigeria.

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